

# Homework Help for Math Out of the Box

## Developing Geometric Logic: Conjectures and Transformations

Information about homework assignments is provided to help parents and other homework helpers with the mathematics ideas that are being developed. The homework help includes definitions of key vocabulary, questions to ask that will help students connect to the classroom investigations, problem solving examples, and other helpful explanations.

### Homework 5A1 follows Lesson 3

- Talk to you child about the purpose of each item. What characteristics are important for this item to be useful?
- Could this item be a different shape? What shape and why?

### Homework 5A2 follows Lesson 5

- How many faces are needed to form a cube?
- When making nets remember that squares must connect side to side.
- Make sure the student cuts out and folds each net to test.
- If needed, have the student cut out six individual squares to manipulate when finding different arrangements for the net.

The following definition may be useful in completing this activity.

- **Net:** A two-dimensional pattern that folds to make a three-dimensional shape.

### Homework 5B1 follows Lesson 7

The following definitions may be useful in completing this activity.

- **Square:** A rectangle with four equal sides and four equal angles.
- **Quadrilateral:** A polygon with four sides and four angles.

- **Parallelogram:** A quadrilateral with two pairs of parallel sides.
- **Rectangle:** A quadrilateral with four right angles.
- **Rhombus:** A parallelogram with four equal sides.

### Homework 5B2 follows Lesson 10

The following definitions may be useful in completing this activity.

- **Diameter:** A line segment that passes through the center of a circle or sphere whose endpoints lie on the circle or sphere.
- **Radius:** A line segment connecting the center of a circle with a point on the circumference of the circle.
- **Acute angle:** An angle that measures greater than 0 degrees and less than 90 degrees.
- **Right angle:** An angle that measures 90 degrees.
- **Obtuse angle:** An angle that measure greater than 90 degrees but less than 180 degrees.
- **Straight angle:** An angle that measures 180 degrees.

### Homework 5C follows Lesson 13

- Ask the student to tell you about the shape set used in class.
- Ask the student to tell you about the fractional relationships found when using the shape set.

### Homework 5D1 follows Lesson 14

The following definitions may be useful in completing this activity.

- **Transformation:** The movement of a figure according to a rule.
- **Translation:** A transformation that slides each point of a figure the same distance in the same direction.
- **Reflection:** A transformation that flips a figure over a line to create a mirror image of the original figure.
- **Rotation:** A transformation that turns a figure about a point.
- **Tessellations:** Patterns in which shapes are transformed across a plane to fill a space without overlapping or gaps.

### Homework 5D2 follows Lesson 16

The following definitions may be useful in completing this activity.

- **Line symmetry:** A shape has line symmetry if a line divides the shape into two congruent parts.
- **Rotational symmetry:** Symmetry that occurs when a shape matches itself as it is turned about its center.

### Homework 5E1 follows Lesson 17

The following definition may be useful in completing this activity.

- **Similarity:** Having the same shape but not necessarily the same size. This means that the angles of the two shapes will match and the sides of the two shapes will be proportional to each other.

The following questions may be helpful.

- How does each side change from the original rectangle?
- Is there a relationship between the sides of the two rectangles?
- What can be said about the relationship of the angles of the two rectangles?